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ABSTRACT

What effect would the manipulation of class size have on students, faculty, and institutional productivity? By providing each student with a class schedule of varying sized classes (at least one very large and at least one small class per student per semester), the student would derive educational benefits and maintain feelings of community in learning consistent with the goals and traditions of a liberal arts college. Data gathered from interviews and questionnaires of students and faculty indicates that small classes are truely preferred. Class size can be controlled so as to enhance instructional productivity, but such control will have to be administratively initiated. (Author/KE)

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CLASS SIZE AND COLLEGE TEACHING:

ATTITUDES AND PREFERENCES

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A report summarizing second year research activities of Project IV: A Multi-patterned Learning Schedule - one of the Projects in Academic Productivity at the College of Saint Benedict funded by a Hill Family Foundation Grant.

May 8, 1976

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PREFACE

This report is the second in a series of reports dealing with the class size and academic productivity at the College of Saint Benedict.

The original funding proposal for this project called for an investigation of the effects of manipulating class size on students, faculty, and institutional productivity. The proposal presented a complex hypothesis: By providing each student with a class schedule of varying sized classes (at least one very large class and at least one small class per student per semester), the student would derive educational benefits and maintain feelings of community in learning consistent with the College of Saint Benedict's goals and traditions. Such scheduling could facilitate making teaching load requirements as a function of student credit hours generated. Instructional productivity then could be increased by increasing the required number of credit hours produced by each faculty member. If these manipulations were to be made sensibly, then students would actually find their educational program improved while the college would find its cost of instruction slightly reduced.

In our first study we gathered a considerable amount of data examining the relationship between class size and what actually happens in the teaching of college classes. We found few stable differences between

class size and a large set of classroom variables. We did find that teachers spend a bit more time in teaching a larger class, but on a per student basis, teacher time is considerably reduced. We also finished the study with the feeling that teachers and students alike prefer small classes, but there was no obvious explanation as to why. This study proceeded to investigate this preference for small classes and the rationale for the preference. The study also tried to analyze that preference so as to derive heuristics for allowing the teacher (and/or the administrator) to be able to use the size of a class as data for making decisions about what to do in a class and to make sense out of the class size variable.

This report focuses on the research project. In addition to doing the project, Tom Peterson and I have been investigating models for instructional productivity. We now view productivity as having two distinct, but related, aspects. One aspect of productivity deals with individual faculty (and staff) performance. The second aspect deals with the overall deployment of instructional resources in a productive manner. We feel that increasing or improving instructional (and institutional) productivity involves improving productivity in both of these areas. Specifically, the productivity of individuals must increase within the context of an increasingly productive plan for utilization of instructional resources if the benefits of higher productivity are to be realized. Later in this year, we will be preparing a second report

which will describe our investigations and present a model for increasing instructional productivity at the College of Saint Benedict.

In preparing this study and report, I would like to thank the following people for their cooperation and contributions: Tom Peterson, who has been both a major contributor and an understanding project director; Patrick Kyllonen and Rita Strouth, who have spent so many hours in collecting and sorting the data and helping to prepare the report; Patti McLaughlin, who has done so well in organizing the data collection and collating the data; and to all of the faculty and students who have been willing to share their attitudes and perceptions with us.

Michal C. Clark
St. Joseph, Minnesota
May 10, 1976

CLASS SIZE AND COLLEGE TEACHING:

ATTITUDES AND PREFERENCES

When we began this study about two years ago we held the notion that by systematically studying and controlling the instructional variable of class size, the productivity of an instructional program could be raised without detracting from the quality of the program. Our original study (Clark and Peterson, 1975) postulated a model for so doing. That original model called for establishing "multi-patterned learning environments" and assumed that if each (or at least almost every) student would enroll in at least one large (over 45 students) course per semester, each student could be guaranteed at least one small (under 18 students) course per semester. Such a guarantee could in fact be given without jeopardizing the average class size or student-faculty ratio necessary for maintaining a balanced instructional budget.

Our search of the literature at that time revealed that little research had been done on the variable of class size in higher education or the ramifications of that variable for institutional productivity. According to comments in Mouly (1973) and McKeachie (1968) there are many questions as to whether class size, per se, is a true variable in that far too frequently, teachers tend to teach in the same ways irrespective of the size of the class. Our first study found substantially that very result to be the case on our small, mid-western liberal arts college campus. We found surprisingly few differences in the way that a

group of teachers taught large and small classes and few differences in the feelings of students regarding those classes.

These findings encouraged us to speculate further on models for raising instructional productivity by selectively increasing the number of large classes. However, we recognized that there is a certain public relations and advertising value in small classes for the liberal arts college. We held off making any specific recommendations until we could collect data on student and faculty attitudes and preferences with respect to class size.

The aim of the present study was to explore those attitudes and preferences. We felt that ascertaining the feelings of our students about the variable of class size could help us to develop a specific model for increasing instructional productivity by manipulating class size without disturbing our students and, hence, affecting retention and recruitment. We felt that information about students expectations in different sized classes (if there indeed were differences between large and small classes) could prove valuable to curriculum developers and teachers in the selection of appropriate teaching/learning activities. We felt that information concerning faculty attitudes and preferences could help shape a model for productivity to be more relevant and appealing to the actual deliverers of our instructional product.

This report describes our data collecting procedures. It summarizes the data and draws conclusions from the findings. The conclusions

discuss ramifications of the findings for the teacher and for the administrator who might want to use class size information in decision making processes. Description of a specific model of instructional productivity utilizing this information will be in a forthcoming report.

PROCEDURES

The goal of this study was to gather reliable information on attitudes and perceptions regarding class size. Data were collected from faculty and students employing a variety of data collection procedures and instruments.

Data from faculty members were collected in a series of interviews of faculty. Data from students were collected initially from interviews and then from a questionnaire which had five major components. The instruments are summarized in Table I. The organization of Table I is used for the remainder of this section. Each instrument will be described. The administration of each and the data analysis procedures for each will be discussed as each is described. Data presentation in the results section will be organized parallel to discussion of the instruments in this section.

FACULTY INTERVIEWS

Information on attitudes, feelings and perceptions of faculty members toward class size was to be collected. Use of an interview format had a great deal of appeal as our faculty already feels "over questionnaired."

Table I

SUMMARY OF INSTRUMENTS USED IN THE STUDY

Instrument	Respondents	Type of instrument
I. Faculty Interview	13 faculty	Minimally structured interview
II. Student Interview	114 students	Structured small group interview
III. Student Questionnaire		
A. Demographic section	294 students	Fill-in-the-blank provision of basic information about the respondent.
B. Class size by academic area	289 students	Rating of appropriateness of class size for lower and upper division work in each academic department.
C. Instructional activity and class size	289 students	Rating of appropriateness of 36 instructional activities for large and small classes using a Likert scale response format.
D. Class size belief items	294 students	Rating of agreement with 35 propositions using a Likert scale response format.
E. Academic area recommendations	286 students	Open ended listing of courses which should be large or small.

We felt that interviews would allow a probing of faculty beliefs, and a more reflective, penetrating set of data could be collected than with a questionnaire. Consistent with this choice, we opted for using a loose interview format which actually resembled a dialogue concerning class size and teaching. Each interview began with the general query "We have been looking at class size as a variable in college teaching. How does class size influence your teaching?" The following questions were then inserted by the interviewer at appropriate times in the ensuing dialogue:

"What differences do you see between teaching in a large class or small class?"

"In what areas do large classes seem reasonable?"

"Which areas seem to demand small classes?"

"What, if any, things should determine the size of class beside instructor's enrollment estimates and uncontrolled student enrollment patterns?"

"Do you have strong preferences for teaching classes of some particular size?"

The interviewer made certain that these questions were covered in each interview. The order of the questions and the exact phrasing of each question varied to fit the pattern of dialogue in each interview. The interviewer continued to keep the discussion focused on implications of the class size variable and maintained notes on the content of each interview.

A sample of 30 teaching faculty at the College of Saint Benedict were randomly selected to be interviewed from the entire teaching faculty. An observation out of last year's study led us to believe that most faculty are somewhat reluctant to sit down and casually (and honestly) discuss their feelings about teaching with one or more colleagues. To minimize faculty anxieties and improve the probability of our getting a large number of our random sample to participate in the interviews, we combined the interviews with lunch in the campus center.

During the first two weeks of October, 1975, five "luncheon sessions" were arranged. The interviewers arranged to be in the campus center from 11:00 A.M. until 1:30 P.M. on each meeting date. Six faculty were invited to each meeting. Time and scheduling were adequate to allow 30-45 minutes of dialogue with each invited faculty member. Due to the inevitable difficulties in campus mail and telephone communications three faculty missed their original meetings and were scheduled into later sessions.

Anticipating a good turn out, the two of us (both faculty members) serving as interviewers arranged to be in the campus center for all of the scheduled meeting times. That way, we could either have a four person dialogue - two interviewers and two faculty - or two, two person dialogues for each of the time slots. In an attempt to help us control

the interview situation the two interviewers practiced the interview dialogue with faculty from a neighboring liberal arts school.

The faculty turn out was less than anticipated. Only 13 faculty actually came to participate in the interviews. The 13 represented a broad range of academic areas and experience. So we decided to accept their responses as a reasonable sampling of faculty opinion rather than drawing a new sample of faculty and scheduling more meetings. The organization of the interview situation fortuitously brought one unanticipated advantage. The "showing up" pattern of faculty was such that it allowed both interviewers to work as a team with each interviewee. One interviewer assumed prime responsibility for maintaining records while the other assumed prime responsibility for maintaining the class size variable oriented focus.

The interviews each lasted longer than expected. They averaged somewhat over an hour in length. The participating faculty and the interviewers all agreed that the interviews did provide for a good dialogue on class size.

The basic data from the interviews were recorded as notes by one of the interviewers. After all interviews were completed, the two interviewers went over the interview notes separately. Then, together, they prepared a set of summary notes from each interview. These data were regarded as basic descriptive statements of the attitudes, feelings, and perceptions of the interviewees. They were not really conducive to any further analysis so they are simply summarized in the results section.

STUDENT INTERVIEWS

Our previous study led us to believe that students have some definite notions about class size and the relevance of that variable to their role as learners. That study did not really identify the dimensions of student concerns with respect to class size. Consequently, we felt a strong need to talk to some students before attempting to collect data in a more fixed response format. A student interview process was set up. The information from these interviews would, then, be useful in constructing a questionnaire to collect more quantifiable information from students.

The student interview situation was much more tightly controlled than the faculty interviews. Each interview was set up and conducted in a fixed format by a trained and practiced student interviewer. For reasons of economy and student availability, a group interview format was used. Three of four students were scheduled for a one hour meeting with an interviewer.

(For the off-campus reader, a digression is needed at this point. The College of Saint Benedict is a women's liberal arts school which offers joint programs with Saint John's University, a nearby men's liberal arts school. Saint Benedict's women take courses at Saint John's, and Saint John's men take courses at Saint Benedict's. Consequently, while we are primarily concerned with faculty and administrative perceptions only at Saint Benedict's, we must be concerned about the opinions of students from both campuses.)

A sample of 160 students was randomly selected from the College of Saint Benedict (CSB) and Saint John's University (SJU) student bodies. The sample was stratified so that 20 females and 20 males were selected from each class. A process applying a random number table to the CSB-SJU joint student directory assured attaining a random sample stratified on the basis of sex and class. We felt that it was important to interview approximately equal numbers of males and females. We also felt that our information should come from all four classes and our prior experience has indicated that upper class students are frequently more articulate in discussing instructional variables. The stratified sample with equal numbers in each class assured us a proportionally larger sample of upper class students (there are considerably more freshmen than seniors in our student population) but still a reasonable sampling of lower class opinion. Since the interviews were to be followed with a questionnaire, we set a goal of interviewing at least twelve females and twelve males in each class. That goal would have resulted in interviewing 96 students out of a combined student body of about 3,000.

As soon as the sample was drawn, in mid-October, each student in it was sent a letter from the project director describing the project and indicating that she/he would soon be contacted by Patti McLaughlin to schedule an interview. To maximize student participation in the interviews an incentive system was set up and described in the letter. The name of each student who participated was entered into a lottery.

After all interviews were completed, four of the participating students were selected as prize winners. Each prize winner won a dinner for two at a nearby supper club.

Within a few days after receipt of the letter, each student in the sample was contacted and interviews were scheduled. Each telephone call was made in accordance with the following fixed format:

> Identification: This is Patti McLaughlin.
> Subject: I am calling about the educational study on class size which you were chosen to be in. The study consists of an interview which takes between ½ hour to 45 minutes. The interviews are being given in a group setting of about 3 or 4 students and a student interviewer. Would you like to participate?
> Interview set up: Dates for these interviews are being set up now and they will continue for about a week and a half. Is there any special time you would like to set one up?

While interviews were being scheduled, interviewers were being trained. Four students (two female and two male) were used as interviewers. Each interview followed the same format. The interviewer would introduce herself/himself. Then, she/he would tabulate the class, sex, age, and any outside work experience of each of the students participating in the interview. Each student would then sign a form which stated:

> I have agreed to participate in the interview on class size. I understand that I am eligible for the drawing for a dinner for two. I further understand that my response will be kept anonymous.

These signed statements were used for determining prize winners. After signing the participation agreement the interview began. The interviewer had four sets of questions to ask. The sets were asked in order, and each question was asked as follows:

I. How many people did you expect to find enrolled in a typical class with you when you came? Have those expectations changed since you have been here?

II. In what ways have the expectations which you had been met here at CSB or SJU? What size are the classes which you consider large, small? Which classes were large, small?

III. Does the fact that your expectations as to class size have or have not been met matter to you?

IV. Do you feel that certain classes would be good small or large? What in your opinion makes a small or large class good? Do you feel that there should be a difference between the two sizes as to methods of teaching, etc.? Are these differences present now?

Small classes were defined as 10-18 students; large classes as above 45 students. The interviewers were trained to focus discussion on these questions. They were trained to minimize their own verbalizations and not express their own opinions and not agree or disagree with student opinions expressed in each interview. They were also trained in response recording. Interviewers participated in a two hour training session. They conducted practice sessions with one another and had to pass a criterion performance test by successfully interviewing the author and the project director, who role played students.

For each interview the responses were recorded on sheets upon which the questions had been dittoed. (Interviewers recorded responses so as to indicate group concensus and to indicate diverging opinions. Any diverging opinions were noted as to the sources to allow for recovering any sex biases or class biases in the data.) Interviewers were paid on

an hourly basis. In scheduling interviews attempts were made to counterbalance sex and class and to have each interviewer conduct an equal number of interviews.

A total of 114 students were interviewed. Given that a few students could not be contacted; a few declined to participate; a few could not be scheduled; and a few simply forgot to show up, a large proportion of the original sample of 160 actually participated in the study. As soon as interviews were completed in early November, the prizes were awarded. We feel as though the sampling scheme, organization of contact and incentive program combined to give us a good representative sample for the student interviews.

The average interview lasted 45 minutes and resulted in several pages of scribbled notes. During the week after the interviews were completed, each interviewer transcribed her/his notes into a readable form which approximated standard English. These revised notes were then turned over to two research assistants who integrated them. The notes were read, cut apart, and reassembled so that similar comments appeared together and interesting contrasts were juxtaposed. They were then summarized into a coherent statement. This data was used in designing the student questionnaire as well as providing some of the findings of this study.

STUDENT QUESTIONNAIRE

After considering the findings of the student and faculty interview data, we decided that we needed additional, quantifiable data from students in three areas: 1) data reflecting the appropriateness of large and/or small classes for lower division work and upper division work in each academic area; 2) data relating opinions on appropriateness of a variety of instructional activities for different size classes; and 3) data reflecting student opinion about different beliefs of class size. We felt that this data should be collected in a way which would allow the responses to be analyzed as a function of the student's sex and class in school.

To meet these requirements we designed a five part questionnaire. The first part asked students to fill in basic demographic data about themselves. The second and fifth parts asked for ratings of different academic areas for appropriateness for large or small classes. The second part used a Likert type scale response format to general academic areas. The fifth part asked for identification of specific classes which could or should be large or small. The third part asked for ratings of different instructional activities as to their appropriateness in large and small classes. The fourth part asked for ratings of agreement with several propositions or beliefs concerning class size. Each part of the instrument will be discussed in detail following a description of the data collection procedures.

All five questionnaire segments were collated into a single questionnaire. This rather massive questionnaire was then given to every student in the combined CSB-SJU student bodies. Distribution to the entire student body was done for several reasons. We did not have to contend with the problems of excluding or including students who had been interviewed into a second random sample. We felt that there was a certain healthy politic about giving every student an equal opportunity to respond. We were really curious as to how many students would respond. We felt that we could not force every student in any random sample to return the questionnaire, so we could not have avoided the "bias from questionnaire returners vs. non-returners" problem anyway.

To help the return rate again we offered incentive prizes. Questionnaires were distributed to every student through their campus mail boxes. Each student was told that the questionnaires could be returned in two ways. First, the student could deposit the questionnaire in a readily accessible office on either campus. At the time of returning the questionnaire, the student could fill out a slip of paper and deposit it in a box for the prize drawing. In that way prizes could be awarded and students could readily see that they were in no way to be directly associated with their responses. (We believe that at this point in our history, an experimenter's promise of guaranteeing anonymity is much less credible than observed non-association of names and responses.) A second option for returning the questionnaire was to use campus mail

and forfeit participation in the prize drawing. Some 95% of the returned questionnaires came in via the first option. A total of 294 questionnaires were returned.

We had one major problem in administration of the questionnaire. Overlaying the project's timetable with the academic calendar, we were forced to either send out the questionnaire one week before Christmas break or wait until March. Given the schedule of our student workers, we felt that it was better to send the questionnaire out in mid-December, and hope for the best. We did so, and a slightly better than 10% return seems reasonable. Again, as soon as questionnaires were returned, incentive prizes were awarded. This time three gift certificates for the campus store were given on each campus.

Our observations and discussions with students indicate that our "incentive prizes" are actually effective. We feel as though a drawing for reasonable prizes works as a motivator and does not offend college students as do some incentive techniques. We are pleased with the level of participation in the student interviews and with the student questionnaire considering that time, resources and schedules could not allow for follow up procedures to be initiated.

Data from the questionnaire were analyzed by section. Hence data analysis will be discussed as each section of the questionnaire is discussed. One general comment applies to all sections: due to the college's limited computer resources all analysis had to be done by hand. With this volume of data, that is no trivial task. The discussion of each section

follows. It must be noted that in all sections, a small class was defined as 10-18 students and a large class as over 45 students.

Section A. This section simply provided blanks for sex, class, age, and major. These were the basic demographic variables which we wanted to use. Of 294 total respondents, 281 gave us all of the demographic information requested.

In data analysis, these data were tabulated. The rest of the sections of the questionnaire were then sorted into sets of data for each major within each sex and class.

Section B. This section asked the student to express a preference for classes of a certain size within different academic areas. Ratings were to be made for both upper and lower division classes. Appendix A presents the item as presented. Students were asked to rate upper and lower division courses in each area on a scale of "1" to "4" where "1" indicated that a small class would be best and a "4" indicated that a large class would be best.

Upon examining responses to these items it appears as though students tended to respond to those areas with which they were familiar and not to other areas. A total of 289 students responded to this section. Data analysis involved calculating mean ratings for upper and lower division courses in each area. Means were calculated for the various respondent groups. Means from different groups were combined as an examination of confidence intervals would allow. The data were then examined for overall trends.

Section C. This section asked the student to rate 36 different instructional techniques for appropriateness in large classes and in small classes. Again, a rating scale of "1" to "4" was used. A rating of "1" indicated "not appropriate." A rating of "4" indicated "very appropriate." Appendix B presents the section as presented to students. The list of class activities includes all of the activities mentioned in interviews as well as all of the activities mentioned in our last year's study.

Mean ratings were calculated for each item for each group of respondents. Groups were combined when confidence intervals would allow. The ratings from all 289 respondents were then used to classify the activities with respect to their perceived use in large and small classes.

Section D. This section asked the student to rate 35 different propositions about class size. The student and faculty interview data were used as sources for deriving the propositions. Each proposition presents some belief about class size. The student was asked to rate each proposition on a scale of "1" to "4" where "1" indicated strong disagreement and "4" indicated strong agreement. A "no opinion" option was also available for each item. Appendix C presents the 35 propositions in the format in which they were included in the questionnaire.

Again, the data were analyzed by examining mean responses within groups, and, then, combining across groups as no mean differences were found. The propositions were ultimately rank-ordered on the basis of their ratings by all 294 students.

Section E. This section simply asked each student to indicate her/his major and then list up to five courses which they felt could be large and list up to five courses which should be small. Some students listed no courses in either column. Some listed five in each column. Most students listed two or three large and two or three small courses.

A frequency tabulation of courses was made as listed by each major group. The data were then organized into tables which would show specific areas where students preferred small or large courses.

RESULTS

The results of the study are presented in the same order as the procedures.

FACULTY INTERVIEWS

The turnout for the faculty interviews was disappointing. We had hoped for the entire sample to share their feelings with us. Table II presents a summary of the interview data from the 13 respondents.

The notes in Table II are about as succinct as the data can be summarized. Our feelings about these data are that most faculty want to teach small classes. The reasons seem to center much more around personally knowing the students than around instructional styles or even subject matter being addressed. There seems to be no surprises in the faculty interview data. In fact, the responses seem to be very much what one might expect. These data should simply be taken at face value and used only within that basic descriptive context.

Table II

Summary of Faculty Interviews

The following are notes from interviews with faculty members. Each faculty member was asked to talk about class size and the implications of that variable for his/her teaching. These summaries came from discussions of several people and the summaries simply represent what each person said in the stream of dialogue.

Assistant Professor of Education

Teacher methodology dictates how large the class can be. The authenticity of the teacher is a more overriding factor than the class size - but small classes allow more of the teacher's caring to come across. Teacher expectations are an important variable with regard to learning outcomes - as important as class size. In order to monitor learning effectively one should have small classes.

Assistant Professor of Sociology

Smaller classes are important early in college years for affective reasons. Large classes are not necessarily bad - introductory classes should be a mixture of large and small classes. The faculty willingness to teach large/small classes would depend on the conditions set up. Retention is related to student's perceptions of teacher effectiveness and authenticity. This should be experimentally tested across disciplines.

Assistant Professor of Education

Affectiveness is not as much attended to in a large class. An unassertive student may be lost in a large class. Some courses are process oriented - they need small enrollments. The method of evaluation should be congruent with class size.

Assistant Professor of Music

Thought that faculty feel the students can be called on to be more accountable in smaller classes. The size of the class affects the inner feelings of both teachers and learners. There is a greater need for extra-class conferences for large classes. The size of the class is relative to the kind of content and domain being stressed.

Table II (cont.)

Assistant Professor of Theater

The methodology of the teacher dictates the size of the class. The nature of the course and the methodology of the teacher are the two factors in determining class size. An important part of learning addresses attitude changes with regard to self-discipline, vocational selection and other life options - in order to have such growth take place, the class size needs to be workable.

Assistant Professors of French (two interviews)

Teacher contact is necessary for each student in each class. Students need much reinforcement. The methodology of the teacher is also important in determining class size. The content and skills being covered should help determine class size. The size of the class is related to the trust necessary in the teaching-learning process.

Instructor in Theology

It is essential to have smaller classes - part of the methodology of teaching depends on the class size. Teacher satisfaction in teaching is dependent on the smaller class size.

Professor of Mathematics

Math does not lend itself easily to large classes. Much board work has to be done. The size of the class dictates the method of teaching it. The social variables related to class size are very important. Teacher-student conferences with larger classes may not be practical in terms of time. "Naturalness" in teaching is important and related to class size.

Assistant Professor of Philosophy

The size of the class changes the attitudes towards attendance. There tends to be a negative attitude in classes over 40. Suggested a reduction of class meetings to accomodate a workable class size. The smaller the classes the more staff required - gets to be a serious financial issue. Need to keep reality in mind.

Table II (cont.)

Assistant Professor of Art

The size of the class should depend on the teacher's temperament and the nature of the class. The subject matter determines the methodology of the class. The size of the class influences the students attitude toward the course. Students need teacher contact. Whether the class is required is also a variable that should be considered when studying class size.

Associate Professor of Education

In smaller classes, it is easier to develop better, more involved, learning activities.

Assistant Professor of Interdisciplinary Studies

A smaller class is necessary to deal with emotional responses (i.e., death and dying). A larger class makes the student more anonymous. Productivity of departments and institutional priorities are real variables that need to be considered. Time needs to be allowed for outside of class contact.

STUDENT INTERVIEWS

A total of 114 students were interviewed in a total of 33 interview sessions. Table III presents a breakdown of the students interviewed by sex and class.

Table III

Number of Students Interviewed

Class	Female	Male	Total
Freshmen	14	14	28
Sophomore	14	11	25
Junior	18	13	31
Senior	15	15	30
Total	61	53	114

These data indicate no bias by sex or class in the interviewees. An examination of the interview data revealed few such differences also. The interview responses are summarized in Table IV. The comments in the table reflect typical responses which were agreed to by most respondents except where noted otherwise.

The comments in Table IV present a very brief summary of a lot of data. The original set of interview notes filled some 250 pages. This summary should be viewed exactly as what it is. The entire set of interview notes were used in developing the student questionnaire.

The student interview data give one the feeling that small classes are preferable to students in most situations. Students feel more involved in small classes. They feel that informal discussion is valuable in that

Table IV

Summary of Student Interview Responses

Note: Responses are grouped according to question sets as indicated.

I. How many people did you expect to find enrolled in a typical class with you when you came? Have those expectations changed since you have been here?

Most students expected that the classes would be relatively small. Between 20-25-30. Some, after reading material about all kinds of colleges, felt that there would be a larger number of people in an average class and that some classes might exceed 100. One third of the male students didn't have any expectations.

After being here for some time the students perception of classes has changed. Most expect the average class to be about 40. Variations are not large. Range about 35-45. Science and introductory classes are expected to be around 50-70.

II. In what ways have the expectations which you had been met here at CSB or SJU? What size are the classes which you consider large, small? Which classes were large, small?

Large classes are: 20 or over (mostly male respondents); 40 or over (mostly female respondents, some male). Females sometimes gave medium size classes 20-40. This was a rare response for guys. All students considered a small class to be under 15 or 20.

Areas for large classes were: Intro's, Sciences, Lower Division and required distributions. Areas for small classes were: Upper Division, Foreign Languages, and East Asian Studies.

III. Does the fact that your expectations as to class size have or have not been met matter to you?

All of the girls interviewed expressed some concern about this question. At least 1/3 or more of the guys said that it didn't matter.

Females	Males
Typically the response was that they were upset that the classes were larger than they expected. Many said that the student handbook was misleading and should be changed.	The ones who did express concern said that they were somewhat upset with the larger class size.

For those who had thought classes would be larger, they expressed relief that this wasn't so.

IV. Do you feel that certain classes would be good small or large? What in your opinion makes a small or large class good? Do you feel that there should be a difference between the two sizes as to methods of teaching, etc.? Are these differences present now?

One fourth of the students said no classes would be good large, but they felt that large classes were a necessary evil. The rest said that some classes were good large and others small. Only one person had anything bad to say about small classes (They are a waste of prof's time). All others liked small classes. They said large classes were good as lectures but it was also agreed that the prof made or broke the large classes. Many thought that intro's should be around 40 so that underclassmen could understand material more. It was also stated several times that the number of upper classmen in a lower division class should be limited.

Good small class: discussions, more informal and personal, can ask questions on the spot, get to know the teacher, and the other students.

Good large class: an interested, competent, dynamic professor.

Students felt that there should be a difference between the two types of classes because they felt most of the time discussions and such in large classes didn't go over well. There were polarized groups in finding an answer to this dilemma. Most agreed however, that it would be nice if large classes, being taught the way they are now, would not exceed an enrollment of over 50.

Students felt that most of the time the differences were present. (Small: informal discussion, Large: formal lecture). Some had had classes in which this was not so. Small classes were taught as formal lectures and some large classes were taught in discussion format. Feelings about the latter varied. If the teacher was good it didn't matter much.

setting. They feel that large classes should be (and are) primarily used for information transmission. There is a strong sense that given a really good teacher, class size may not matter that much.

These statements are nice, but they do not give us a precise view or quantifiable information as to how students perceive class sizes. They must be viewed in their context of descriptive data. The student questionnaire data were amenable to more precise analysis and, hence, provides the most useful data of the study for drawing inferences.

STUDENT QUESTIONNAIRE

The student questionnaire data will be presented for each section of the instrument.

Section A. Table V presents the demographic breakdown for the student questionnaire data.

Table V

Demographic Characteristics of Student Questionnaire Respondents

A. By sex and class

Class	Female	Male	Total
Freshmen	45	22	67
Sophomore	53	34	87
Junior	47	25	72
Senior	39	16	55
Total	184	97	281 (13 non-respondents)

B. By division of major:

Division	Number
Humanities	63
Natural Sciences	123
Social Sciences	85
Undecided	27
Total	294

C. By major:

Major	Number
Accounting	11
Art, Theater & Dance	6
Biology	14
Business	7
Chemistry & Dietetics	12
Economics	12
Elementary Education	25
Government	10
History	7
Home & Community Studies	16
Languages	27
Math	23
Music	10
Natural Sciences	15
Nursing	25
Psychology	14
Sociology and Social Welfare	29
Theology	10
Undecided	21
Total	294

An examination of Table V reveals that more females responded than males. That is to be expected since the study was under College of Saint Benedict sponsorship. Response by class seems to indicate that

all classes responded equally. A Chi-square test of the class distribution does not allow rejection of the hypothesis of equal responsiveness by class. Looking at respondents by division reveals that our responding sample has an overabundance of science students responding. Examination of the major distribution shows a wide range and good distribution of students by major. Overall, these data indicate that our respondents are probably representative of the college student population (at least those who fill out questionnaires). These data was used in analyzing the remainder of the student questionnaire.

Section B. In this section students were asked to rate both upper and lower division classes by indicating preference for small or large classes in each academic area. The data showed no differences by sex or class so the data were collapsed across those two variables.

Another expected form of response bias for this item was that students would always rate their major area as needing small classes more than other areas. The following contingency table presents mean ratings across all students for courses in the student's major area and for all other courses:

	Upper Division	Lower Division
Major	2.25	1.68
Non-major	2.29	1.81

The smaller the rating, the stronger the preference for small classes. These data clearly indicate that all students feel upper division courses should be smaller than lower division courses (significant at .05 level by a t-test for dependent means). There is no difference between ratings for the major and non-major areas (t-test, not significant). Thus, there seems to be no "major oriented" response bias.

Table VI presents mean ratings by academic area of student and academic area of course. These ratings are interesting in that they indicate the lower division humanities courses are preferred to be smaller than lower division science and social science courses while upper division science and humanities courses are preferred to be smaller than upper division social science courses. We expected the overall preference for smaller upper division courses, but the interaction between division and area (social sciences upper division courses not so preferred to be small) was unanticipated. These findings are even more interesting in that the pattern is stronger when all students rate classes in each area (Table VI B) than when students in each area rate all classes (Table VI A). The larger mean differences in Table VI B provide additional support to the contention that students are indeed rating the areas for class size rather than showing a pro-major or pro-area of major bias.

The ratings of all students were combined for each academic area since the differences in rating by area seem to be more attributable to the academic area of the course than to the major area of the student.

Table VI

Ratings of Class Size Preference by Academic Area

Note: the smaller the mean response the stronger the preference for small classes.

A. By area of student (each student rating all courses)

Area of Student	Number	Lower Division	Upper Division
Science	123	2.25	1.77
Humanities	63	2.16	1.89
Social Sciences	85	2.23	1.83

B. By area of class (each student rating all courses, 289 respondents)

Area of Class	Lower Division	Upper Division
Sciences	2.34	1.79
Humanities	2.01	1.75
Social Sciences	2.38	1.93

Table VII

Academic Areas Where Preference for Large or Small Classes Shown (based on all students ratings, n=289.)

Preference	Areas	
	Lower	Upper
Large Classes	Biology Chemistry History Psychology Sociology	Economics & Business Administration History Sociology Physical Education Interdisciplinary Studies
Small Classes	Philosophy Art Foreign Languages Music Theater & Dance	Philosophy Art Foreign Languages Music

These data were analyzed so that departments where the obtained mean ratings were beyond the 90% confidence limits for the grand mean could be detected and hence an indication of preference for large and small classes could be seen by area. Table VII presents the results of that analysis. The entries in Table VII might best be interpreted as identifying those departments where lower and/or upper division class size could either be raised or maintained at a higher level without risking violation of student preference. The lower half of the table identifies departments where lower and/or upper division courses need to be maintained at small sizes in order to not violate student preference.

Section C. The rating of instructional activities for appropriateness in large and small classes turned up many interesting findings. Table VIII presents the mean rating and rankings for each activity. An examination of Table IX shows top and bottom activity rankings of students grouped by sex and class. Table X shows top and bottom activity rankings of students grouped by major area. Even a casual examination of these tables reveals only minor differences between the sex, class, and major area groups. As a result of this lack of difference, the data from all students as presented in Table XIII become the major results of this section.

An analysis of the data in Table XIII give the following statistical data:

	Mean Rating	Standard Deviation
Large Class	2.82	.51
Small Class	3.21	.30

Table VIII

Mean Ratings of Instructional Activities for Appropriateness in Large and Small Classes

Note: The higher the mean, the more appropriate the activity was rated; a rating of 3 = slightly appropriate; 4 = very appropriate; n = 289.

Instructional Activity	Large Classes		Small Classes		Mean Difference (Small - Large)
	Mean Rating	Rank	Mean Rating	Rank	
Lecture	3.74	2	2.63	35	-1.11
Small group discussion	2.37	30	3.42	9	1.05
Large group discussion	2.53	25	3.17	23.5	.64
Objective test	3.57	4	2.96	29.5	-.61
Essay test	2.62	23.5	3.41	10	.79
Oral project	2.12	33	3.39	11	1.27
Take home test	2.72	19	2.94	31	.22
Student Presentations	2.20	31	3.37	14	1.17
Panel Discussions	2.71	20	3.21	21	.50
Simulation Games	2.16	32	3.25	19	1.09
Programmed Instruction	2.96	15.5	2.29	36	-.67
Role-Playing	2.04	34	3.19	22	1.15
Psychodrama	2.00	35	2.87	33	.87
Independent Study	3.00	13	3.10	25	.10
Opaque Projector	3.16	10	3.00	28	-.16
News Articles	2.96	15.5	3.35	16	.39
Sensitivity Exercises	2.00	36	3.29	17.5	1.29
Demonstration	3.22	8	3.53	4	.31
Student Performance	2.52	26	3.44	7	.92
Field Trip	2.66	22	3.66	2	1.00
Internships	2.70	21	3.46	5.5	.76
Video Taping and Critique	2.45	28	3.24	20	.79
Audio Taping and Critique	2.40	29	3.17	23.5	.77
Reading	3.44	6	3.37	14	-.07
Term Paper	3.04	11	3.06	27	.02
Board Work	2.51	27	2.96	29.5	.45
Problems Sets	2.83	18	2.92	32	.09
Workbooks	3.03	12	2.64	34	-.39
Student Teacher Dialogue	2.62	23.5	3.67	1	1.05
Student Student Dialogue	2.99	14	3.63	3	.64
Overhead Projector	3.21	9	3.07	26	-.14
Movies	3.75	1	3.43	8	-.32
Slides	3.65	3	3.46	5.5	-.19
Slide Tape	3.52	5	3.37	14	-.15
Filmstrip	3.42	7	3.29	17.5	-.13
Laboratory Work	2.85	16	3.38	12	.53

Table IX

Top and Bottom Ranked Activities for Large and Small Classes by Sex and by Class

LARGE CLASSES ACTIVITY RANKING

	Males				Females			
	F=22	Soph.=34	Jr.=25	Sen.=16	F=45	Soph.=53	Jr.=47	Sen.=39
1	Lecture	Lecture	Lecture	Lecture	Lecture	Movies	Movies	Lecture
2	Slides	Obj.test	Obj. test	Movies	Reading	Lecture	Slides	Movies
3	Movies	Movies	Reading	Obj.test	Movies	Filmstrip	Lecture	Obj.test
4	Reading	Slides	Movies	Internship	Slides	Slide-tape	Slide-tape	Slides
5	Obj.test	Over.proj.	S-T dial.	Demo	Obj.test	Over.proj.	Reading	Slide-tape
36	Oral proj.	Psychodrama	Program.I.	Sensitivity	Oral Proj.	Stud.pres.	Oral proj.	Role play
35	Stud.pres.	Role play	Oral proj.	Oral proj.	Stud.pres.	News art.	Sensitivity	Sensitivity
34	Sm.group	Oral proj.	Sensitivity	Psychodrama	Sensitivity	Simulation	Role play	Oral proj.
33	Psychodrama	Sensitivity	Role play	Lg. group	Problems	Oral proj.	Lg. group	Psychodrama
32	Simulation	Stud. pres.	Psychodrama	Role play	Role play	Role play	Stud.pres.	Stud.pres.

SMALL CLASSES ACTIVITY RANKING

	Males				Females			
	F=22	Soph.=34	Jr.-25	Sen.=16	F=45	Soph.=53	Jr.-47	Sen.=39
1	Field trip	S-S dial.	S-T dial.	Sm.group	Field trip	Demo	S-T dial.	Field trip
2	S-S dial.	Sm.group	S-S dial.	S-T dial.	S-T dial.	Field trip	Field trip	Internship
3	Essay test	S-T dial.	Demo	S-S dial.	Movies	Internship	S-S dial.	S-T dial.
4	Sm.group	Stud.pres.	Internship	Field trip	Internship	S-T dial.	Oral proj.	Movies
5	Lab work	Field trip	Sm.group	Internship	Stud. pres.	S-S dial.	Movies	Demo
36	Program.I.	Program.I.	Obj.test	Obj.test	Program.I.	Program.I.	Lecture	Lecture
35	Workbook	Lecture	Program.I.	Lecture	Lecture	Workbook	Stud.pres.	Program.I.
34	Obj.test	Psychodrama	Workbook	Program.I.	Problems	Lecture	Program.I.	Psychodrama
33	Opaq.proj.	Workbook	Psychodrama	Filmstrip	Boardwork	Take home	Workbook	Workbook
32	Lecture	Obj.test	Take home	Psychodrama	Workbook	Opaq.proj	Obj.test	Simulation

Table X

Top and Bottom Ranked Activities for Large and Small Classes by Academic Area

LARGE CLASSES ACTIVITY RANKING

	Total	Humanities	Natural Science	Social Science	Undecided
1	Movies	Movies	Lecture	Lecture	Slide-tape
2	Lecture	Slides	Movies	Obj. Test	Slides
3	Slides	Lecture	Slides	Movies	Movies
4	Obj.Test	Slide-tape	Obj.Test	Simulation	Reading
5	Slide-tape	Filmstrip	Slide-tape	Reading	Filmstrip
36	Sensitivity	Sensitivity	Oral proj.	Oral proj.	Oral proj.
35	Psychodrama	Psychodrama	Sensitivity	Role playing	Stud. Pres.
34	Role playing	Role playing	Simulation	Lg.grp.dis.	Simulation
33	Oral proj.	Stud.Pres.	Role playing	Stud.Pres.	Sensitivity
32	Simulation	Simulation	Psychodrama	Psychodrama	Psychodrama

SMALL CLASSES ACTIVITY RANKING

	Total	Humanities	Natural Science	Social Science	Undecided
1	S-T dial.	Field trips	Field trips	Sm.grp.dis.	Stud.pres.
2	Field trips	S-S dial.	S-T dial.	S-T dial.	S-T dial.
3	S-S dial.	S-T dial.	S-S dial.	S-S dial.	Field trips
4	Demo	Movies	Demo	Essay test	Internship
5	Slides	Intemship	Slides	Lg.grp.dis.	Stud. pres.
36	Program.I.	Program.I.	Program.I.	Workbooks	Program.I.
35	Lecture	Workbooks	Lecture	Program.I.	Obj.test
34	Workbooks	Lecture	Workbooks	Psychodrama	Lecture
33	Psychodrama	Psychodrama	Psychodrama	Opaq.proj.	Indep.study
32	Problem sets	Boardwork	Take home	Take home	Take home

This mean difference is statistically significant ($t = -3.76$, $p<.05$). So, the average activity tended to be rated higher in smaller classes. The correlation between the activity ratings produced an $r = -.103$. This correlation coefficient was not significant ($t_r = -.60$, 35 df.). The ratings between small and large classes are independent. We can assume that the students did indeed respond to class size within activity independently of an overall positive bias toward small classes.

Table XI was generated by using the mean difference column of Table VIII. The average mean rating difference was .39 (small being rated that much better than large). The standard error of the difference was found to be .11. We then took the product of the standard error of the difference and the t-value for a 99% confidence interval (.11 x 2.72) which yielded a result of about .3. We used this $\frac{1}{2}$ width of 99% confidence interval to establish limen for sorting activities into categories of appropriate for large classes and appropriate for small classes. The results of this sort are presented in Table XI. Our procedure for doing the sort gives us a high level of confidence of its statistical accuracy.

Table XI presents activities ordered in terms of their appropriateness for use in a large or small class. We believe that by using this table, a teacher can improve the appropriateness of instruction in a class. For example, if a teacher had a large class and only used activities rated as appropriate for a large class, the teacher could expect a mean activity rating which would more than offset the normal positive student rating bias toward a smaller class. Likewise, a teacher could improve ratings

of a smaller class by using more activities which are more appropriate for a larger class. It is the author's hope to refine this table and the scaling procedure behind it and ultimately generate some true heuristics for helping the teacher select instructional activities which are appropriate for a given sized class.

All other things being equal, an instructor would be well advised to choose the highest ranking appropriate activity from Table XI in structuring a course. In so doing, the instructor would increase the probability of utilizing instructional activities deemed appropriate for the size of the class the students are in.

In summary, the results of this section indicate four major findings. First, student ratings of appropriateness of instructional activities for large or small classes seem to not be related to class, sex, or major of the student. Second, in large classes, other than serving as a lecturer, highly rated activities demand little teacher involvement. In small classes, highly rated activities demand much teacher involvement. Activities rated inappropriate for large classes seem to demand more teacher involvement. Hence, teacher involvement seems to be much more desired and much more appropriate in small classes than in large ones. Third, large classes seem to be very information transmission oriented while small classes seem to be more discussion and interaction oriented. Fourth, (and surprising to this author) psychodrama, role playing and sensitivity exercises are rated much lower for both class sizes than current humanistic trends in education would lead one to believe.

Table XI

Instructional Activities Organized to Reflect Appropriateness for Large or Small Classes

Note: mean ratings are from Table VIII for Large and Small class activities and are a composite of Table VII data for either size group.

FOR LARGE CLASSES

Activity	Mean Rating	Rank*
Movies	3.75	1
Lecture	3.74	2
Objective Tests	3.57	3
Workbooks	3.03	4
Programmed Instruction	2.96	5

FOR EITHER LARGE OR SMALL CLASSES, BUT PREFERABLE IN LARGE

Activity	Mean Rating	Rank
Slides	3.55	1
Slide-tape	3.45	2
Reading	3.40	3
Filmstrips	3.35	5
Overhead Projector	3.14	8
Opaque Projector	3.08	10
Independent Study	3.05	11.5
Term Paper	3.05	11.5
Problem Sets	2.88	14

PREFERABLE IN SMALL

Activity	Mean Rating	Rank
Demonstration	3.37	4
Student-student dialogue	3.31	6
News Articles	3.16	7
Lab Work	3.11	9
Panel Discussion	2.96	13
Large Group discussion	2.85	15
Take Home Test	2.83	16
Board Work	2.73	17

FOR SMALL CLASSES

Activity	Mean Rating	Rank
Student Teacher Dialogue	3.67	1
Field Trip	3.66	2
Internship	3.46	3
Student Performances	3.44	4

* Rank here is rank within the group (large, small or either).

Table XI (cont.)

Activity	Mean Rating	Rank
Small Group Discussion	3.42	5
Essay Test	3.41	6
Oral Project	3.39	7
Student Presentation	3.37	8
Sensitivity Exercise	3.29	9
Simulation Games	3.25	10
Video Tape & Critique	3.24	11
Role Playing	3.19	12
Audio Tape & Critique	3.17	13
Psychodrama	2.87	14

Section D. The ratings of the class size related propositions produced some direct information on student beliefs and attitudes. Chi square tests of responses to a randomly selected set of items revealed no differences between responses due to sex, class, or academic area. All of the ratings were pooled to produce a mean rating for each item.

Table XII presents the mean ratings of each item. In that table the propositions have been rank ordered from the one most strongly agreed with to the one most disagreed with. The higher the mean rating, the stronger the agreement. The items have also been separated into four categories: 1) those which received ratings of definite agreement; 2) those which demonstrated a slight agree tendency; 3) those which received neutral ratings; and 4) those where there was definite disagreement. A slight disagreement category would have been used, but no items fell into it. These categories were derived by a consideration of confidence limits of the mean ratings combined with the descriptions of the ratings. The real impact of these data can best be obtained simply by reading the propositions in each category in the table. The internal consistency seems striking.

In summary for the data in this section, those propositions where there was definite agreement indicate that students feel taking a small class is better because they get to know other students and the teacher better and because there is more involvement in small classes. Those items with a tendency toward agreement simply tend to reiterate (maybe

Table XII

Mean Ratings of Class Size Propositions

Note: the higher the mean rating, the stronger the agreement. N=294

ITEMS WHERE THERE WAS DEFINITE AGREEMENT:

Proposition	Rank	Mean Rating
Getting to know fellow students is important to me.	1	3.58
Upper division classes should be smaller than lower division classes.	2	3.56
All things being equal, small classes are better than large classes.	3	3.55
In small classes I feel as though I am involved more as a whole person.	4	3.52
I get to know my fellow students better in a smaller class.	5	3.49
I get more feedback on my performance in small classes than in large classes.	6	3.41
In order to be good a small class must offer much opportunity for informal discussion.	7	3.35
Teacher authenticity is more important than size of class.	8	3.32
I learn better in small classes.	9	3.28
You had strong expectations about class size before enrolling at CSB-SJU.	10	3.18
In large classes I do not get to know my teacher well enough.	11	3.15
I am more inclined to attend smaller classes.	12	3.11
All other things being equal you learn more in a small class than in a large class.	13	3.09
Small classes in your first year of college help you to adjust to college life.	14	3.04

Table XII (cont.)

ITEMS WHERE THERE WAS A TENDENCY TOWARD AGREEMENT:

Proposition	Rank	Mean Rating
Class size is important to me.	15	2.96
I feel as though evaluation procedures are more fair in small classes than in large classes.	16	2.93
In large classes I feel as though I only learn information.	17	2.89
Smaller class size improves the quality of instruction.	18	2.84
In a small class I have more opportunities to talk with my instructor outside of class.	19	2.81

ITEMS WHICH WERE NEUTRAL:

I would be willing to alter my class schedule in order to take more small classes.	20	2.70
Lower division classes should be smaller than they are.	21	2.69
I feel inhibited in a large class.	22	2.65
Class size is irrelevant; the quality of a class depends on the quality of teacher instruction.	23	2.62
I would be willing to take some large classes so that I could be assured of taking some small classes.	24	2.60
Small class size is important to my staying at CSB-SJU.	25	2.43
Lower division requirements can best be handled in large classes.	26	2.39
The college catalog was misleading with respect to class size.	27	2.33
In order to be good a large class must be a formal lecture course.	28	2.29

Table XII (cont.)

ITEMS WHERE THERE WAS DEFINITE DISAGREEMENT:

Proposition	Rank	Mean Rating
I feel threatened by a small class.	29	2.02
You found class size smaller than you expected.	30	1.99
I learn better in large classes.	31	1.88
Lower division classes should be larger than they are.	32	1.71
I would be willing to pay more tuition in order to be assured of more small classes.	33	1.54
Upper division classes should be larger than they are.	34	1.48
It should be required that each semester each student take at least one large class and one small class.	35	1.40

less strongly) the same trends as where there was strong agreement. The neutral propositions indicate that class size in and of itself is probably not a highly charged variable to students. Most students would not change schools because of class size. In fact most students are not even willing to change their schedule in order to have more small classes. The disagreed with propositions indicate that classes probably should not be larger. The student definitely feels that she/he does not learn better in large classes. She/he definitely like smaller classes, but there is a strong sense that the student is unwilling to pay any premium to insure more smaller classes.

Combining these data with those of Section C, we can definitely say that small classes are preferred over large ones. Students want some involvement in their small classes. Too much involvement is not wanted. While the student does have definite feelings, she/he is not willing to take action or sacrifice anything (even a change in registration procedures) to have more smaller classes.

Section E. This question asked students to list courses which could be large and courses which could be small. The results point out some interesting conflicts of opinion. A total of 261 courses were listed in the large column. A total of 323 were listed in the small column. Of these totals, 124 courses were listed in both columns. Thus, nearly half of the "large" courses should be small and over a third of the "small" courses could be large. It must be noted that there

was considerable confusion on our part in trying to decide whether two different course titles were in fact the same course or two different courses. The data were combined only when the listed titles were identical or the titles obviously referred to the same course (Psychology 111 or Intro. Psychology).

Table XIII presents a list of courses which were frequently listed. The courses are presented in rank order according to their frequency. This summary table represents a pooling across all students. Table XIV presents the three courses most frequently listed in the large column and the three most frequently listed in the small column by students in each of the indicated majors. The courses are listed in rank order. With both of these tables it is interesting to note the frequency with which courses appear in both columns. We must assume that students view what should be a large or small course in an individual way that cannot be accounted for by sex, class, or major of the student. The data in these two tables might be useful to departments as they consider changing curricular structure as the data do reflect student perceptions and expectations.

Table XIII

Courses Frequently Identified by Students

THOSE WHICH SHOULD BE SMALL:

Course	Frequency
Elementary Education Methods	29
Introductory Chemistry*	23
Calculus*	16
Introductory Statistics*	15
Human Resources Development	12
Upper Division Math Courses	10

THOSE WHICH COULD BE LARGE:

Concepts of Biology	55
Introductory Psychology	40
Introductory Sociology	34
Introductory Chemistry*	30
Introductory Statistics*	18
Macro Economics	16
Micro Economics	16
Calculus*	14
Accounting Principles	14

* These courses are listed as being preferred to be small by some students and large by others.

Table XIV

Large and Small Courses as Preferred by Students of Various Majors

Note: only those majors and major groupings with over 10 students responding are included. Each listing presents in rank order the three courses most frequently listed by students in the indicated major as needing to be small or acceptable to be large. Course titles are as listed by students - not catalogue titles.

Major of Student	Large Courses	Small Courses
Art, Theater & Dance	Color III Drawing/Design "None"	"All courses" (26 courses were each listed once)
Biology	Concepts of Biology Zoology General Botany	Cellular-Molecular Biology Genetics Physiology
Economics, Business & Accounting	Macro Economics Micro Economics Accounting Principles	Manager Accounting Statistics Income tax accounting
Elementary Education	Child & Adolescent Development Curriculum Math - El. Ed.	"Methods Courses" Human Relations Math - El. Ed.
English	World Literature Advanced Composition Rhetoric	Shakespeare American Literature Advanced Composition
Foreign Languages	"No Courses" Introductory "language" Intermediate "language"	Theater "Language" composition Lower Division language course
Government and History	American Government European History "Century" History "Minis"	History of Political Thought Research Seminar Comparative European Government

Table XIV (cont.)

Major of Student	Large Courses	Small Courses
Home & Community Service	Introductory Psychology Introductory Sociology Clothing/People	Family Dynamics Food Fundamentals Meal Management & Marketing
Math & Physics	Calculus Basic Physics Math History	"Upper Division" Math Analysis "All courses"
Music	Choir Music History Symphony Band	Music Techniques Music History
Natural Sciences	Concepts of Biology Introductory Chemistry Basic Physics	Upper Division Chemistry Calculus Upper Division Physics
Nursing	Concepts of Biology Introductory Psychology Introductory Sociology	Introductory Chemistry Child & Adolescent Development "All Upper Division Courses"
Psychology	Introductory Psychology Statistics Abnormal Psychology	Experimental Psychology Psychology Seminar Statistics
Sociology & Social Welfare	Introductory Sociology Introductory Psychology Statistics	Human Resources Development Crisis Intervention Sociology Methods
Theology	New Testament and Old Testament Introductory Psychology God & the Human Predicament	Classical Theological Literature Christian Adults "Upper Division Theology Courses"

CONCLUSIONS

At this point in time we want to restrict the concluding remarks to those patterns within the data which provide clear statements about the class size variable. We are confident that the following statements do in fact reflect what this study's data show.

First, small classes are preferred over large ones when other things are equal. Students would rather take small classes because they feel more involved. Faculty would rather teach small classes because they sense that in them they get to know their students better. Faculty also tend to feel that small classes require less work than large ones. While students feel that small classes are better because they allow for more involvement, students rate "involvement demanding" activities as being not worthwhile for large classes.

Second, small classes are more appropriate for certain specific areas. Philosophy, art, foreign languages, music, theater and dance are areas where small classes seem to be necessary. In general, lower division social science and natural science courses can be large. Upper level social science courses can also be large. The data of Table XIII clearly indicate that there are many individual difference factors operating. So, these generalizations apply to many students, but not to all.

Third, the instructional activities used in a class probably should be selected and/or developed with a consideration of class size. Our

previous study indicated that large classes and small classes tend to do the same things. This study indicates that student response would probably improve if activities were chosen so as to be appropriate for a given sized class. Table XI provides information which should be useful to any teacher in matching up activities so as to be appropriate to the class size variable.

Perhaps the major finding of this study is what appears to be a true paradox to me. Small classes are truly preferred. Small classes seem to rate somewhere between motherhood and apple pie on a universal preference scale. Yet, no one seems willing to exert any effort to make it possible to have any more small classes. The importance of this paradox seems to lie in its implications for the college administrator. A corollary statement is: while everyone preaches the virtues of small classes, an absence of small classes would probably not cause much of an uproar and might, in fact, be surprisingly unnoticed. It is our hope that no one would read this paradoxical statement and simply increase class size (hence, reduce instructional costs) across the board. On the other hand, it does seem reasonable to advocate that under appropriate conditions, class size can be increased without harming quality of instruction. The appropriate conditions seem to be simply to 1.) avoid a few "small preference" areas and 2.) implement appropriate instructional activities and procedures in large classes. A report discussing specific ramifications of increasing class size in this manner for the College of Saint Benedict is forthcoming.

In conclusion class size does seem to be a variable that has pay off for improving instructional productivity. The findings of this study support the notion that class size can be controlled so as to enhance instructional productivity. Faculty and student reactions indicate that such control will have to be administratively initiated.

Our findings lead us to believe that a liberal arts college can improve instructional quality and increase the size of some classes simultaneously.

Appendix A

Section B of Student Questionnaire
Rating of Academic Areas for Appropriate Class Size

The following list presents the various major areas of study offered here. Please rate these academic areas as to whether small or large classes are most appropriate. Please give a separate rating for lower division and upper division courses. If you have no opinion about an area, leave the lines by that area blank. Please write your ratings on the lines by each area. Use the following scale:

1 = small class best
2 = small class preferable
3 = large class preferable
4 = large class best

Area	Lower Division	Upper Division
Biology	_____	_____
Chemistry	_____	_____
Economics	_____	_____
Education	_____	_____
History	_____	_____
Philosophy	_____	_____
Physics	_____	_____
Psychology	_____	_____
Sociology	_____	_____
Art	_____	_____
English	_____	_____
Language	_____	_____
Math	_____	_____
Music	_____	_____
Physical Education	_____	_____

Appendix A (cont.)

Area	Lower Division	Upper Division
Theology	_____	_____
East Asian Studies	_____	_____
Home & Community Services	_____	_____
Interdisciplinary Studies	_____	_____
Nursing	_____	_____
Social Welfare	_____	_____
Theater & Dance	_____	_____

Appendix B

Section C of Student Questionnaire
Instructional Activities Rating List

Teaching Characteristics Check List
Rate the degree of appropriateness of each method of instruction given the class size.

1 = Not Appropriate
2 = Slightly Inappropriate
3 = Slightly Appropriate
4 = Very Appropriate

	Large (45 or more)	Small (18 or less)
Lecture	1 2 3 4	1 2 3 4
Small Group Discussion	1 2 3 4	1 2 3 4
Large Group Discussion	1 2 3 4	1 2 3 4
Objective Test	1 2 3 4	1 2 3 4
Essay Test	1 2 3 4	1 2 3 4
Oral Project	1 2 3 4	1 2 3 4
Take Home Test	1 2 3 4	1 2 3 4
Student Presentations	1 2 3 4	1 2 3 4
Panel Discussions	1 2 3 4	1 2 3 4
Simulation Games	1 2 3 4	1 2 3 4
Programmed Instruction	1 2 3 4	1 2 3 4
Role-Playing	1 2 3 4	1 2 3 4
Psychodrama	1 2 3 4	1 2 3 4
Independent Study	1 2 3 4	1 2 3 4
Opaque Projector	1 2 3 4	1 2 3 4
News Articles	1 2 3 4	1 2 3 4
Sensitivity Exercises	1 2 3 4	1 2 3 4
Demonstration	1 2 3 4	1 2 3 4
Student Performance	1 2 3 4	1 2 3 4
Field Trip	1 2 3 4	1 2 3 4
Internships	1 2 3 4	1 2 3 4
Video Taping and Critique	1 2 3 4	1 2 3 4
Audio Taping and Critique	1 2 3 4	1 2 3 4
Reading	1 2 3 4	1 2 3 4
Term Paper	1 2 3 4	1 2 3 4
Board Work	1 2 3 4	1 2 3 4
Problems Sets	1 2 3 4	1 2 3 4
Workbooks	1 2 3 4	1 2 3 4
Student Teacher Dialogue	1 2 3 4	1 2 3 4

Appendix B (cont.)

	Large (45 or more)	Small (18 or less)
Student Student Dialogue	1 2 3 4	1 2 3 4
Overhead Projector	1 2 3 4	1 2 3 4
Movies	1 2 3 4	1 2 3 4
Slides	1 2 3 4	1 2 3 4
Slide Tape	1 2 3 4	1 2 3 4
Filmstrip	1 2 3 4	1 2 3 4
Laboratory Work	1 2 3 4	1 2 3 4

Appendix C

Section C of Student Questionnaire
Rating of Class Size Propositions

Key: 1 = Strongly Disagree 2 = Slightly Disagree 3 = Slightly Agree
4 = Strongly Agree X = No Opinion

Circle Your Response

1.	I had strong expectations about class size before enrolling at CSB-SJU.	1	2	3	4	X
2.	I found class size smaller than I expected.	1	2	3	4	X
3.	The college catalog was misleading with respect to class size.	1	2	3	4	X
4.	All things being equal, small classes are better than large classes.	1	2	3	4	X
5.	Upper division classes should be smaller than lower division classes.	1	2	3	4	X
6.	Lower division classes should be larger than they are.	1	2	3	4	X
7.	Upper division classes should be larger than they are.	1	2	3	4	X
8.	Lower division classes should be smaller than they are.	1	2	3	4	X
9.	In order to be good a large class must be a formal lecture class.	1	2	3	4	X
10.	In order to be good a small class must offer much opportunity for informal discussion.	1	2	3	4	X
11.	All other things being equal you learn more in a small class than in a large class.	1	2	3	4	X
12.	Class size is irrelevant; the quality of a class depends on the quality of teacher instruction.	1	2	3	4	X
13.	I would be willing to alter my class schedule in order to take more small classes.	1	2	3	4	X
14.	I would be willing to take some large classes so that I could be assured of taking some small classes.	1	2	3	4	X
15.	It should be required that each semester each student take at least one large class and one small class.	1	2	3	4	X

Appendix C (cont.)

16.	In small classes I feel as though I am involved more as a whole person.	1	2	3	4	X
17.	In large classes I feel as though I only learn information.	1	2	3	4	X
18.	I learn better in small classes.	1	2	3	4	X
19.	I learn better in large classes.	1	2	3	4	X
20.	I would be willing to pay more tuition in order to be assured of more small classes.	1	2	3	4	X
21.	Smaller class size improves the quality of instruction.	1	2	3	4	X
22.	In large classes I do not get to know my teacher well enough.	1	2	3	4	X
23.	Class size is important to me.	1	2	3	4	X
24.	Teacher authenticity is more important than size of class.	1	2	3	4	X
25.	I get more feedback on my performance in small classes than in large classes.	1	2	3	4	X
26.	Small classes in your first year of college help you to adjust to college life.	1	2	3	4	X
27.	Small class size is important to my staying at CSB-SJU.	1	2	3	4	X
28.	I feel as though evaluation procedures are more fair in small classes than in large classes.	1	2	3	4	X
29.	I feel inhibited in a large class.	1	2	3	4	X
30.	I feel threatened by a small class.	1	2	3	4	X
31.	In a small class I have more opportunities to talk with my instructor outside of class.	1	2	3	4	X
32.	I get to know my fellow students better in a smaller class.	1	2	3	4	X
33.	Getting to know fellow students in class is important to me.	1	2	3	4	X
34.	I am more inclined to attend smaller classes.	1	2	3	4	X
35.	Lower division requirements can best be handled in large classes.	1	2	3	4	X

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